7.5 Zeros of Polynomial Functions

Date: _____

IN

List all of the factors of each number

1. **21** 2. **60**

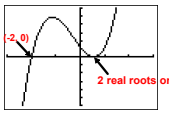
State whether the given linear expression is a factor of the given polynomial. *(Use long division)*

3. $3x^3 - 4x^2 - x + 5$; $x+1$

Feb 25-10:15 AM

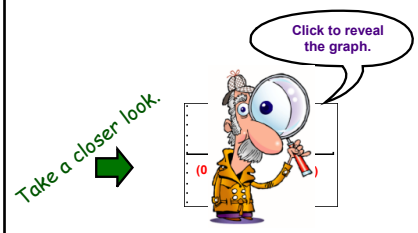
Find all of the rational roots of $10x^3 + 9x^2 - 19x + 6 = 0$

Graph $P(x) = 10x^3 + 9x^2 - 19x + 6$



2 real roots or 1 real root with multiplicity of 2?

```
WINDOW
Xmin=-3
Xmax=3
Xscl=1
Ymin=-30
Ymax=30
Yscl=5
Xres=1
```




```
WINDOW
Xmin=.3
Xmax=.8
Xscl=.1
Ymin=-.5
Ymax=.5
Yscl=.1
Xres=1
```

2nd ⟶ calc (Trace) ⟶ 2: Zero

Mar 23-5:09 PM

Let's test whether P(-2) = 0, P(1/2) = 0, and P(3/5) = 0 are true.

$x+2 \overline{)\,10x^3 + 9x^2 - 19x + 6}$ $x - \frac{1}{2} \overline{)\,10x^3 + 9x^2 - 19x + 6}$

$\frac{3}{5}$ | 10 9 -19 6

Mar 23-5:29 PM

Find all of the zeros of $Q(x)=x^3 - 2x^2 - 2x + 1$.

1. Graph

2. Check.

$x+1 \overline{)\,x^3 - 2x^2 - 2x + 1}$

3. F...

Because Q(-1) = 0, $x+1$ is a factor of $x^3 - 2x^2 - 2x + 1$.

$x^3 - 2x^2 - 2x + 1 = 0$

$(x+1)(x^2 - 3x + 1) = 0$

$x+1 = 0$ or $x^2 - 3x + 1 = 0$

The Quadratic Formula ...

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

For Quadratic Equations $ax^2 + bx + c = 0$

Mar 23-5:33 PM

Find all of the zeros of $P(x) = 3x^3 - 10x^2 + 10x - 4$.

1. G...

2. Check.

2 | 3 -10 10 -4

3. Finish.

Because P(2) = 0, $x-2$ is a factor of $3x^3 - 10x^2 + 10x - 4$.

$3x^3 - 10x^2 + 10x - 4 = 0$

$(x-2)(3x^2 - 4x + 2) = 0$

$x-2 = 0$ or $3x^2 - 4x + 2 = 0$

Mar 23-5:33 PM

1

OUT: pg. 463 #14

Find all of the rational roots of each polynomial equation.

$3x^3 + 3x^2 - 4x + 4 = 0$

Summary:

Finding roots...
or
I learned that I...

Homework

7.5 HW P.463-464 #11-33 odd, 52

Mar 27-8:37 AM